

### **REMARKS**

This responds to the Office Action mailed on January 9, 2008.

The specification has been amended to include trademark symbols in paragraph 007.

Claims 1-23 are now pending in this application. However, claims 1, 11, 21, 22 and 23 are withdrawn from consideration by the Examiner as a result of the restriction requirement.

Accordingly, claims 2-10, 12-20 are now under examination.

Claims 2, 3 and 12 are amended. In particular, the phrase “binary data carried by electrical, molecular or light signals,” is now used instead of “electrical, molecular or light data.” Support for subject matter relating to “binary data carried by electrical, molecular or light signals” can be found throughout the specification as originally filed, for example, in original paragraph 0083, in the Figures and in the Demonstration.

Applicant submits that these changes do not constitute new matter.

### ***§112 Rejection of the Claims***

Claims 2-10 and 12-20 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite with respect to the phrase “binary electrical, molecular or light data.”

Applicant submits that indefiniteness depends on whether one of skill in the art would understand the scope of the claim when the claim is read in light of the specification. *North American Vaccine Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993). If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more. *Miles Laboratories Inc. v. Shandon, Inc.*, 997 F.2d 870, 27 USPQ2d 1123 (Fed. Cir. 1993).

The claims are now directed to a stream of binary data carried by electrical, molecular or light signals. Applicant submits that this language is clear and definite, and that no further clarification is needed.

Withdrawal of this rejection under 35 U.S.C. § 112, second paragraph, with respect to claims 2-10 and 12-20 is respectfully requested.

***§102 Rejection of the Claims***

Claims 2-10 and 12-20 have been rejected under 35 U.S.C. § 102(b) as allegedly anticipated by O'Keefe (US 2002/0004204 A1) in light of Berlien et al. (US 5,850,195). The Examiner alleges that O'Keefe teaches every element of claims 2-6, 8-10, 12-15 and 18-20, and that O'Keefe teaches the subject matter of claims 7, 16 and 17 as taught by Berlien.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Accordingly, Applicant will treat the rejection as a rejection over O'Keefe, where the Berlien reference is used to clarify the subject matter of the O'Keefe reference.

In addition to a requirement that references cannot be combined to show anticipation, Applicant notes that the reference must show the identical invention in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989). To constitute anticipation, the claimed subject matter must be identically disclosed in the prior art. *In re Arkley*, 172 U.S.P.Q. 524 at 526 (C.C.P.A. 1972). For anticipation, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the art. *Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ2d 101 (Fed. Cir. 1991). To overcome the defense of anticipation, "it is only necessary for the patentee to show some tangible difference between the invention and the prior art." *Del Mar Engineering Lab v. Physio-Tronics, Inc.*, 642 F.2d 1167, 1172, (9<sup>th</sup> Cir. 1981).

The Examiner asserts that the term "comprising" in Applicants claims means that the claims may include additional embodiments. However, when the cited references fail to teach all elements of the claims, the cited references fail to anticipate the claims.

The Examiner also asserts that, like the O'Keefe reference, the instant claims require use of a light to digital signal converter. However, Applicant's claims call for use of a stream of binary data before, during and after the stream passes through the substrate. In other words, during the practice of the inventive method, the data stream is never an analog signal. In contrast, O'Keefe discloses an analog device that does not rely upon transmission of a digital signal through a substrate. Instead, O'Keefe generates and detects an analog signal.

O'Keefe is limited to a conventional microarray superimposed over a conventional photodetector. The light signal received by the photodetector of O'Keefe is not a binary digital signal – instead the O'Keefe signal involves conventional light emission and/or absorption from the molecules stuck to the array. That fact that the term “binary” appears nowhere in the O'Keefe disclosure is evidence that the light detected by the O'Keefe photodetector is not digital data. While O'Keefe mentions “conversion of light to digital frequency components,” O'Keefe only contemplates such conversion after the analog signal is received from the array. See O'Keefe paragraph 73.

Moreover, O'Keefe does not disclose a substrate that senses and transmits perturbations in a continuous stream of binary data carried by electrical, molecular or light signals through the substrate. Thus, the present invention is more like a computer chip through which binary digital data is transmitted and manipulated while the O'Keefe device is more like a microarray attached to a spectrometer.

Applicant submits that no one has previously described or contemplated a device comprising simply a substrate with one or more molecular species, where the substrate itself transmits digital data defining and identifying the molecular species on the substrate. Nor has anyone contemplated detection of molecular changes in, and interactions with, the molecular species on such substrate by directly monitoring digital information flowing through the substrate.

The Examiner recognizes that the optical signal generated by the molecules on the O'Keefe device is converted into digital data *after* detection by the photodetector (previous Office Action top of page 6). One advantage provided by the present invention is that there is no need to convert analog information into digital information, thereby eliminating the need for several pieces of equipment and other materials, including reporting molecules that provide a detectable signal, analog signal detectors (like the photodetector described by O'Keefe), devices for converting analog signals into digital signals, etc. Therefore, the invention clearly provides an advance over the prior art.

Applicant submits that O'Keefe therefore fails to disclose at least the following elements of the claimed invention:

- creating at least one stream of binary data carried by electrical, molecular or light signals; and
- transferring at least one stream of binary data carried by binary electrical, molecular or light signals through a substrate; and
- receiving the at least one stream of binary data carried by electrical, molecular or light signals that were transferred through the substrate.

Moreover, the Berlien disclosure does not satisfy any deficiency of the O'Keefe reference or teach any element relevant to the present invention. Instead Berlien is limited to disclosure of a light-to-digital signal converter. While such a converter may be used by O'Keefe to convert an analog signal into a digital signal after the analog signal is detected, such methodology is not part of the present invention. Instead, the present invention uses a stream of digital data throughout the input and output steps of the present invention. Hence, the Berlien reference is irrelevant.

Applicant submits that claims 2-10 and 12-20 are novel and distinct over O'Keefe (US 2002/0004204 A1) in light of Berlien et al (US 5850195) and respectfully requests withdrawal of this rejection under 35 U.S.C. § 102(e).

**CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (516) 795-6820 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 9th day of May 2008.

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